

Problem of the Day

What are the properties of a midsegment. (Hint: there are 3 of them!)

Dec 4-7:10 AM

$$1) y = \frac{1}{3}x + 9$$

↑
slope = m

Perpendicular lines

$$m_1 = -\frac{1}{m_2}$$

$$m_1 = -\frac{1}{1/3}$$

$$m_1 = -1(3/1) = -3$$

$$a) y = \frac{3}{1}x - 7$$

$$b) y = \frac{1}{3}x + 11$$

$$c) y = -\frac{1}{3}x + 1$$

$$d) y = \frac{1}{3}x - 1$$

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2) Which values cannot make a triangle?

a) 4, 3, 7 $4+3=7$

These values will NOT make a triangle!

b) 3, 8, 6

$$3+6=9 > 8 \quad 3+8=11 > 6 \quad 8+6=14 > 3$$

c) 2, 4, 5

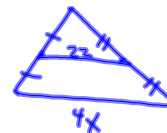
$$2+4=6 > 5 \quad 2+5=7 > 4 \quad 4+5=9 > 2$$

d) 4, 6, 9

$$4+6=10 > 9 \quad 4+9=13 > 6 \quad 6+9=15 > 4$$

Rule: if the sum of two sides is not greater than the third side then you cannot make a triangle. So "a" cannot be a triangle. (I worked out the other three combos to show that all three pairs do meet the conditions for the other choices.)

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$$\frac{1}{2}(4x) = 2x$$

$$2x = 22$$

$$x = 11$$

midsegment = 1/2 third side

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πd or $2\pi r$ = circumference

d=2 in r=1

d=6 in r=3



a) 8π

b) 10π

c) 32π

d) 40π

$$\pi(2)^2 = 4\pi$$

$$\pi(3)^2 = 9\pi \text{ sq. in.}$$

$$\pi(1)^2 = \pi \text{ sq. in.}$$

$$9\pi - \pi = 8\pi$$

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5)



isosceles
2 congruent sides

2 congruent base angles

$$x + x + 50 = 180$$


$$2x = 130$$

$$x = 65$$

Equilateral
3 sides congruent
3 angles congruent

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4)



total length = 42

$$3x + 2x + 2 = 42$$

$$5x + 2 = 42$$

$$5x = 40$$

$$x = 8$$

$$2(8) + 2 = 18 = MP$$

$$3(8) = 24$$

$$\frac{24}{42}$$

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7) (24,3) (2,5)

$(x, y) = \text{coordinate pair}$

$$M = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

$$= \left(\frac{24+2}{2}, \frac{3+5}{2} \right)$$

$$= \left(\frac{26}{2}, \frac{8}{2} \right)$$

$$= (13, 4)$$

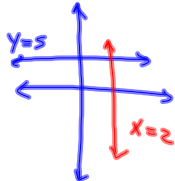
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8) (2,1) (4,5)

$$m = \left(\frac{y_2 - y_1}{x_2 - x_1} \right) \quad \frac{\text{rise}}{\text{run}} \quad \frac{\Delta y}{\Delta x}$$

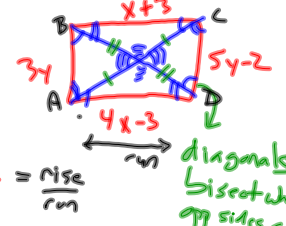
$$m = \left(\frac{5-1}{4-2} \right)$$

$$m = \left(\frac{4}{2} \right)$$

$$m = 2$$


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9) x,y



diagonals bisect when opp sides are ll

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{\text{rise}}{\text{run}}$$

$$m_{AC} = \frac{5y-2}{4x-3}$$

$$m_{BD} = \frac{3y}{x+3}$$

Parallelogram: both pairs of opposite sides must be congruent

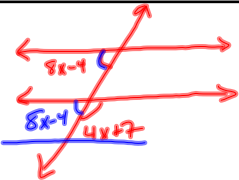
$$3y = 5y - 2 \quad x + 3 = 4x - 3$$

$$2 = 2y \quad 6 = 3x$$

$$1 = y \quad 2 = x$$

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10)



alt interior
alt exterior
same side int
corresponding

vertical angles
linear pairs

$$8x - 4 + 4x + 7 = 180$$

$$12x + 3 = 180$$

$$12x = 177$$

$$x = 14.75$$

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